

IN THE CLAIMS

1. (currently amended) An image rendering apparatus, comprising:

extracting means for determining that a given line part of an object depicted in a three-dimensional image is a visually important line part and for extracting data representing a predetermined the visually important line part of an object depicted in a three dimensional image from data representing the three-dimensional image;

image rendering means for rendering the three-dimensional image;

antialiasing antialiased image forming means for antialiasing only the extracted data to form forming an antialiased image portion of associated with the predetermined visually important line part of the depicted object by antialiasing the extracted data; and

overwriting means for overwriting only the antialiased image portion onto a corresponding portion of the rendered image.

2. (currently amended) An image rendering apparatus according to claim 1, wherein ~~said extracting means extracts data representing the visually important line part includes a contour lines of the depicted object as the data representing the predetermined line part or extracts data representing the contour lines and or a contour candidates of the depicted object as the data representing the predetermined line part.~~

3. (currently amended) An image rendering apparatus according to claim 1, wherein said image rendering means renders the three-dimensional image using polygon data information that represents the three-dimensional image, and said extracting means extracts the data representing the predetermined visually

important line part by extracting a corresponding data from part
of the polygon data, the corresponding data being selected from
the group consisting of line data, curve data and line strip
data information.

4. (currently amended) An image rendering apparatus according to claim 1, wherein the ~~predetermined~~ visually important line part passes through a plurality of pixels, and said ~~antialiased antialiasing image forming~~ means generates pixel values for each of the plurality of pixels as a function of an occupancy value of that pixel, the occupancy value of a respective pixel being based on a ratio of an area of an occupied portion of the pixel to an area of the pixel, the area of the occupied portion of the pixel being based on an area occupied by a portion of the ~~predetermined~~ visually important line part that passes through the pixel when the ~~predetermined~~ visually important line part is a straight line, ~~the area of the occupied portion of the pixel or~~ being based on an area occupied by an ideal straight line segment which approximates the portion of the ~~predetermined~~ visually important line part when the ~~predetermined~~ visually important line part is curved.

5. (currently amended) An image rendering apparatus according to claim 4, wherein the portion of the ~~predetermined~~ visually important line part or the ideal straight line segment forms an angle with an X-axis, and said ~~antialiased antialiasing image forming~~ means antialiases a range of pixels along the X-axis when the angle is equal to or larger than a predetermined value and antialiases a range of pixels along a Y-axis that is orthogonal to the X-axis when the angle is smaller than the predetermined value.

6. (currently amended) An image rendering apparatus according to claim 4, wherein each of the plurality of pixels is

divided into a matrix of sub-pixels, and said ~~antialiased~~
~~antialiasing image-forming~~ means determines the area of the
occupied portion of the pixel in units of sub-pixel areas.

7. (currently amended) An image rendering method,
comprising:

determining that a given line part of an object
depicted in a three-dimensional image is a visually important
line part;

extracting data representing a ~~predetermined~~ the
visually important line part of an object depicted in a three-
dimensional image from data representing the three-dimensional
image;

rendering the three-dimensional image;

antialiasing only the extracted data to form ~~forming~~
an antialiased image portion ~~of~~ associated with the
~~predetermined visually important line part of the depicted~~
~~object by antialiasing the extracted data;~~ and

overwriting only the antialiased image portion onto a
corresponding portion of the rendered image.

8. (currently amended) An image rendering method
according to claim 7, wherein ~~said step of extracting the data~~
~~representing the predetermined visually important line part~~
includes ~~extracting data representing a~~ contour lines of the
depicted object or ~~extracting data representing the contour~~
~~lines and a contour candidates~~ of the depicted object.

9. (currently amended) An image rendering method
according to claim 7, wherein said step of rendering an image
includes rendering the three-dimensional image using polygon
data information that represents the three-dimensional image,
and said step of extracting the data representing the
~~predetermined visually important line part~~ includes extracting a

corresponding data from part of the polygon data, the corresponding data being selected from the group consisting of line data, curve data and line strip data~~information.~~

10. (currently amended) An image rendering method according to claim 7, wherein the ~~predetermined~~ visually important line part passes through a plurality of pixels, and said step of forming the antialiased image portion includes generating pixel values for each of the plurality of pixels as a function of an occupancy value of that pixel, the occupancy value of a respective pixel being based on a ratio of an area of an occupied portion of the pixel to an area of the pixel, the area of the occupied portion of the pixel being based on an area occupied by a portion of the ~~predetermined~~ visually important line part that passes through the pixel when the ~~predetermined~~ visually important line part is a straight line, ~~the area of the occupied portion of the pixel or~~ being based on an area occupied by an ideal straight line segment which approximates the portion of the ~~predetermined~~ visually important line part when the ~~predetermined~~ visually important line part is curved.

11. (currently amended) An image rendering method according to claim 10, wherein the portion of the ~~predetermined~~ visually important line part or the ideal straight line segment forms an angle with an X-axis, and said step of forming the antialiased image portion includes antialiasing a range of pixels along the X-axis when the angle is equal to or larger than a predetermined value and antialiasing a range of pixels along a Y-axis that is orthogonal to the X-axis when the angle is smaller than the predetermined value.

12. (previously presented) An image rendering method according to claim 10, wherein each of the plurality of pixels is divided into a matrix of sub-pixels, and said step of

forming the antialiased image portion includes determining the area of the occupied portion of the pixel in units of sub-pixel areas.

13. (currently amended) A computer-readable storage medium having a computer program stored therein for operating an apparatus to perform an image rendering method, said method comprising:

determining that a given line part of an object depicted in a three-dimensional image is a visually important line part;

extracting data representing a ~~predetermined~~ the visually important line part of an object depicted in a three-dimensional image from data representing the three-dimensional image;

rendering the three-dimensional image;

antialiasing only the extracted data to form ~~forming~~ an antialiased image portion of ~~associated with~~ the ~~predetermined visually important line part of the depicted object by antialiasing the extracted data;~~ and

overwriting only the antialiased image portion onto a corresponding portion of the rendered image.

14. (currently amended) A storage medium according to claim 13, wherein ~~said step of extracting the data representing the ~~predetermined~~ visually important line part~~ includes extracting data representing a contour lines of the depicted object or ~~extracting data representing the contour lines and a contour candidates~~ of the depicted object.

15. (currently amended) A storage medium according to claim 13, wherein said step of rendering an image includes rendering the three-dimensional image using polygon data ~~information~~ that represents the three-dimensional image, and

said step of extracting the data representing the ~~predetermined~~ visually important line part includes extracting ~~a~~ corresponding data from ~~part of the~~ polygon data, the corresponding data being selected from the group consisting of line data, curve data and line strip data~~information~~.

16. (currently amended) A storage medium according to claim 13, wherein the ~~predetermined~~ visually important line part passes through a plurality of pixels, and said step of forming the antialiased image portion includes generating pixel values for each of the plurality of pixels as a function of an occupancy value of that pixel, the occupancy value of a respective pixel being based on a ratio of an area of an occupied portion of the pixel to an area of the pixel, the area of the occupied portion of the pixel being based on an area occupied by a portion of the ~~predetermined~~ visually important line part that passes through the pixel when the ~~predetermined~~ visually important line part is a straight line, ~~the area of the occupied portion of the pixel or~~ being based on an area occupied by an ideal straight line segment which approximates the portion of the ~~predetermined~~ visually important line part when the ~~predetermined~~ visually important line part is curved.

17. (currently amended) A storage medium according to claim 16, wherein the portion of the ~~predetermined~~ visually important line part or the ideal straight line segment forms an angle with an X-axis, and said step of forming the antialiased image portion includes antialiasing a range of pixels along the X-axis when the angle is equal to or larger than a predetermined value and antialiasing a range of pixels along a Y-axis that is orthogonal to the X-axis when the angle is smaller than the predetermined value.

18. (previously presented) A storage medium according to claim 16, wherein each of the plurality of pixels is divided into a matrix of sub-pixels, and said step of forming the antialiased image portion includes determining the area of the occupied portion of the pixel in units of sub-pixel areas.

19. (currently amended) A server apparatus, comprising:

a computer-readable storage medium for storing a computer program for operating an apparatus to perform an image rendering method; and

distributing means for distributing the computer program stored on the computer-readable storage medium;

wherein the method includes:

determining that a given line part of an object depicted in a three-dimensional image is a visually important line part;

extracting data representing a ~~predetermined~~ the visually important line part of an object depicted in a three-dimensional image from data representing the three-dimensional image;

rendering the three-dimensional image;

antialiasing only the extracted data to form ~~forming~~ an antialiased image portion ~~of associated with the predetermined visually important line part of the depicted object by antialiasing the extracted data;~~ and

overwriting only the antialiased image portion onto a corresponding portion of the rendered image.

20. (currently amended) A computer-readable storage medium having a computer program stored therein for operating an apparatus to perform an image rendering method, said method comprising:

determining that a given line part of an object depicted in a three-dimensional image is a visually important line part;

extracting a portion of data from data representing a the three-dimensional image, the portion of data representing a ~~predetermined the visually important line part of an object depicted in the three dimensional image;~~

rendering the three-dimensional image;

forming an antialiased image portion ~~of associated~~ with the ~~predetermined visually important line part~~ of the depicted object by antialiasing only the extracted data; and

overwriting only the antialiased image portion onto a corresponding portion of the rendered image.

21. (currently amended) A computer-readable storage medium according to claim 20, wherein the ~~predetermined visually important line part~~ includes at least a contour line of the depicted object or a contour candidate of the depicted object.

22.-32. (cancelled)

33. (currently amended) An image rendering apparatus, comprising:

extracting means for determining that a given line part of an object depicted in a three-dimensional image is a visually important line part and for extracting a portion of data from data representing a ~~the three-dimensional image, the portion of data representing a predetermined the visually important line part of an object depicted in the three-dimensional image;~~

rendering means for rendering the three-dimensional image;

antialiased image forming means for forming an antialiased image portion ~~of associated with the predetermined~~

visually important line part of the depicted object by antialiasing only the extracted data; and

overwriting means for overwriting only the antialiased image portion onto a corresponding portion of the rendered image.

34. (currently amended) An image rendering apparatus according to claim 33, wherein the ~~predetermined~~ visually important line part includes ~~at least a~~ contour line of the depicted object or a contour candidate of the depicted object.

35. (cancelled)

36. (currently amended) An image rendering method, comprising:

determining that a given line part of an object depicted in a three-dimensional image is a visually important line part;

extracting a portion of data from data representing a three-dimensional image, the portion of data representing a ~~predetermined the visually important line part of an object depicted in the three dimensional image;~~

rendering the three-dimensional image;

forming an antialiased image portion ~~of~~ associated with the ~~predetermined~~ visually important line part of the depicted object by antialiasing only the extracted data; and

overwriting only the antialiased image portion onto a corresponding portion of the rendered image.

37. (currently amended) An image rendering method according claim 36, wherein the ~~predetermined~~ visually important line part includes ~~at least a~~ contour line of the depicted object or a contour candidate of the depicted object.

38. (cancelled)

39. (new) A computer-readable storage medium according to claim 20, wherein said step of rendering the image includes rendering the three-dimensional image using polygon data that represents the three-dimensional image, and said step of extracting the portion of data representing the visually important line part includes extracting corresponding data from the polygon data, the corresponding data being selected from the group consisting of line data, curve data and line strip data.

40. (new) An image rendering apparatus according to claim 33, wherein said rendering means renders the three-dimensional image using polygon data that represents the three-dimensional image, and said extracting means extracts the portion of data representing the visually important line part by extracting corresponding data from the polygon data, the corresponding data being selected from the group consisting of line data, curve data and line strip data.

41. (new) An image rendering method according to claim 36, wherein said step of rendering the image includes rendering the three-dimensional image using polygon data that represents the three-dimensional image, and said step of extracting the portion of data representing the visually important line part includes extracting corresponding data from the polygon data, the corresponding data being selected from the group consisting of line data, curve data and line strip data.